

Amendments to the Claims

This listing of the claims replaces all previous listing of claims.

Listing of the Claims

1. (WITHDRAWN) Particulate material intended for dispersion in a liquid medium to provide a suspension, the particulate material comprising a plurality of particles dispersible in the liquid medium, the particles optionally each comprising an active agent wherein the particles are density-controlled, each particle comprising an effective quantity of a density-reducing agent within the particle to provide the particle with a desired bulk density.
2. (WITHDRAWN) Particulate material according to claim 1 wherein the quantity of density-reducing agent is sufficient to permit the particles to be uniformly and stably dispersed in the liquid medium or is sufficient to provide the particles with a density less than or equal to the density of the liquid medium or is from about 0.8 g/ml to about 1 g/ml.
3. (WITHDRAWN) Particulate material according to claim 1 wherein the density of the particles is such that the particles can maintain a uniform distribution in the liquid medium when standing quiescent at about room temperature for a period of at least 1 month.
4. (WITHDRAWN) Particulate material according to claim 1 wherein the particulate material comprises gel beads.
5. (WITHDRAWN) Particulate material according to claim 2 wherein the particulate material comprises gel beads.
6. (WITHDRAWN) Gel beads according to claim 2 wherein the gel beads have a visual property selected from the group consisting of visibility in the intended liquid medium, a transparent colored appearance, a transparent colored appearance and transparency in the intended liquid medium.

7. (WITHDRAWN) Gel beads according to claim 2 wherein the gel beads comprise or constitute a cosmetic or pharmaceutical material intended for topical application to the skin, hair, nails, oral or other bodily cavity of a mammal.

8. (WITHDRAWN) Gel beads according to claim 6 wherein the gel beads have a density relative to water of close to 1.0.

9. (WITHDRAWN) Gel beads according to claim 6 wherein the gel beads have an average diameter or other maximum dimension in a range selected from the group consisting of from about 0.1 mm to about 10 mm and from about 0.5 mm to about 3 mm.

10. (WITHDRAWN) Gel beads according to claim 6, wherein the gel beads comprise a material selected from the group consisting of agar, synthetic polymers and copolymers, natural polymers, botanically derived gels, vinyl polymers, acrylamide polymers, polysaccharides, proteins, and carbopol.

11. (WITHDRAWN) Gel beads according to claim 6 wherein the density-reducing agent comprises hollow microspheres having a polymeric shell around the hollow interior.

12. (WITHDRAWN) Gel beads according to claim 6 wherein the density-reducing agent comprises thermally expandable microspheres having a polymeric shell around a hollow interior.

13. (WITHDRAWN) Gel beads according to claim 6 wherein the quantity of density-reducing agent is in the range of from about 0.02 weight percent to about 0.1 weight percent of the gel bead.

14. (WITHDRAWN) Gel beads according to claim 13 wherein the density of the density-reducing agent is from about 0.03 g/cc to 0.06 g/cc.

15. (WITHDRAWN) Gel beads according to claim 6 wherein the active agent is selected from the group consisting of antioxidants, botanically derived polyphenols, procyanidin oligomers,

free radical scavengers, topically active enzymes, antibacterials, glucose oxidase, antioxidants, superoxide dismutase, proteolytic enzymes, bromelain, DNA repair enzymes, exfoliative retinoids, retinol, retinol esters, retinol acetate, vitamin A palmitate, purified plant extracts, plant proteins, whitening agents, arbutin, essential fatty acids, linoleic acid, linolenic acid, arachidonic acid, collagen, elastin, keratin, moisturizers, hyaluronic acid, glycosaminoglycans, ultraviolet light filters, ultraviolet light absorbents, coated and uncoated organic and inorganic pigments, titanium, zinc, and iron oxides, melanin, sepia ink extract, colorants, dyes and perfumes.

16. (WITHDRAWN) Gel beads according to claim 15 wherein the gel beads comprise a restraining polymer dispersed in the gel bead.

17. (WITHDRAWN) Gel beads according to claim 16 wherein the restraining polymer has a molecular weight of at least 50,000 daltons and effective to prevent egress of the restraining polymer from the gel, having retention groups to bind the active agent to the restraining polymer for retention in the gel beads, being present in a proportion effective to deliver an effective amount of the active agent and being selected from the group consisting of polyquaternium 11, polyquaternium 24, laurdimonium hydroxyethylcellulose, cocodimonium hydroxyethylcellulose, steardimonium hydroxyethylcellulose, quaternary ammonium substituted water-soluble polysaccharides, alkyl quaternary celluloses and polypeptides having or provided with retention groups to retain the active agent.

18. (WITHDRAWN) A suspension comprising particulate material dispersed in a liquid medium wherein the particulate material is material according to claim 1.

19. (WITHDRAWN) A suspension comprising gel beads dispersed in a liquid medium wherein the gel beads are gel beads according to claim 6.

20. (WITHDRAWN) A suspension according to claim 19 wherein the liquid medium comprises an aqueous medium, an oil medium, a silicone medium or a lipophilic medium, the liquid medium optionally being transparent.

21. (WITHDRAWN) A suspension according to claim 20 wherein the liquid medium has a density of about 1.0 g/ml or less than about 1.2 g/ml.

22. (WITHDRAWN) A suspension according to claim 20 wherein the refractive indices of the gel beads and the liquid medium are sufficiently different one from the other that the particles are clearly visible in the liquid medium.

23. (WITHDRAWN) A suspension according to claim 19, wherein the suspension is suitable for application to or ingestion by humans or other mammals.

24. (WITHDRAWN) A suspension according to claim 19, wherein the suspension comprises a cosmetic, a pharmaceutical or a foodstuff.

25. (WITHDRAWN) A suspension according to claim 19 wherein the suspension comprises a cosmetic or a pharmaceutical and is a lotion, a cream or a gel.

26. (CURRENTLY AMENDED) A method of preparing density-controlled beads dispersible in a liquid medium for incorporation into cosmetic products, with the beads comprising as ~~bead material~~ ingredients:

(i) an active agent;

(ii) an effective quantity of a ~~substantially-impermeable~~ density-control agent that reduces the density of the resulting beads to promote uniform dispersion in the liquid medium by providing the bead with a desired bulk density ~~and substantially to avoid adsorption of other bead ingredients~~; and

(iii) a ~~bead material~~ gelling agent that is liquid at elevated temperatures,

the method comprising:

(a) admixing the bead material ingredients at an elevated temperature dissolving the gelling agent in water at an elevated temperature sufficient to dissolve the gelling agent to form a

first mixture, the gelling agent being dissolved in a proportion of gelling agent to water effective to form a gel at a lower temperature than the elevated temperature;

(b) dispersing the density-control agent in water or oil at room temperature to form a second mixture;

(c) adding the second mixture to the first mixture to form a third mixture;

(d) cooling the third mixture to a discharge temperature below the elevated temperature but above the gelling point of the first mixture;

(e) discharging the third mixture through a needle to form droplets or globules, the third mixture being discharged while at the discharge temperature; and

(f) forming the resultant mixture into droplets or globules; (e)-cooling the droplets or globules to form beads;

~~(d) using wherein~~ said density-control agent is present in a quantity sufficient to provide a desired gel bead density.

27. (CURRENTLY AMENDED) A method according to claim 26 wherein ~~said bead material comprises a water soluble gelling agent and said admixing comprises:~~

~~dissolving said water soluble gelling agent, in water heated to an elevated temperature sufficient to dissolve the gelling agent, in a proportion of gel to water effective to form a gel at a lower temperature than the elevated temperature to form a first mixture;~~

~~dispersing said density-control agent in a density-control agent-carrier to form a second mixture;~~

~~adding the second mixture to the first mixture to form a third mixture, said third mixture being at a discharge temperature above the gelling point of the third mixture; and~~

~~discharging the third mixture through a needle to form drops; and~~

~~forming gel beads by~~ cooling the droplets or globules includes exposing the drops to a liquid maintained at a temperature below the third mixture's gelling point, whereby the drops are formed into gel beads incorporating the density-reducing agent.

28. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26 wherein the gel beads have an average particle diameter of from about 0.1 mm to 10 mm, and said water soluble gelling agent comprises agar, and wherein said carrier comprises water and said liquid to which said drops are exposed is hydrophobic.

29. (PREVIOUSLY PRESENTED) A method according to claim 28 wherein the first temperature is about 90°C.

30. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26 wherein a water-soluble restraining polymer is included in the gel beads and wherein said carrier comprises water and said liquid to which said drops are exposed is hydrophobic.

31. (PREVIOUSLY PRESENTED) A method according to claim 30 wherein an active agent is added into said first, second, or third mixture and wherein said carrier comprises water and said liquid to which said drops are exposed is hydrophobic.

32. (PREVIOUSLY PRESENTED) A method according to claim 31 wherein the restraining polymer used has a molecular weight of at least 50,000 daltons and is effective to prevent egress of the restraining polymer from the gel, the restraining polymer having retention groups to bind the active agent to the restraining polymer for retention in the gel beads, being present in a proportion effective to deliver an effective amount of the active agent and being selected from the group consisting of polyquaternium 11, polyquaternium 24, laurdimonium hydroxyethylcellulose, cocodimonium hydroxyethylcellulose, steardimonium hydroxyethylcellulose, quaternary ammonium substituted water-soluble polysaccharides, alkyl quaternary celluloses and polypeptides having or provided with retention groups to retain the active agent.

33. (CURRENTLY AMENDED) A method according to claim 31 wherein the ~~gel particles~~ beads are manually crushable on the skin to increase the surface area of the gel particles and expose the restraining polymer to a topical body surface for release of the active agent.

34. (CURRENTLY AMENDED) A method according to claim 32 wherein the gel beads ~~comprise restraining polymer~~ comprises about 0.2 to about 7.5% by weight restraining polymer based on the weight of the gel particles ~~gel beads~~.

35. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, wherein the discharge temperature is about 45°C.

36. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, wherein the density-control agent is pre-dispersed in oil.

37. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, comprising admixing ~~an~~ the active agent in step (a) or step (b) with the gel bead material ingredients whereby the active agent is incorporated in the gel beads.

38. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, wherein the density-control agent comprises heat-expandable microspheres.

39. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, comprising pre-dispersing a pigment in water and mixing the pre-dispersed pigment with the second mixture before adding the second mixture to the third mixture.

40. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, wherein the gel beads ~~comprise gelling agent~~ comprises about 1.5 by weight gelling agent based on the weight of the gel particles ~~gel beads~~.

41. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, wherein the gel beads ~~comprise density-control agent~~ comprising about 0.01% to about 5% by weight density-control agent based on the weight of the gel particles ~~gel beads~~.

42. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, wherein the gel beads

~~comprise density-control agent comprising~~ about 0.02% to about 0.1% by weight density-control agent based on the weight of the gel particles-gel beads.

43. (WITHDRAWN) A protective cosmetic particulate gel delivery system for a topically applied active agent, the delivery system comprising discrete, self-supporting gel particles of from 0.1 mm to 10 mm average size, the particles being insoluble in water at 25°C. and being formed of:

- a) a liquid medium having a density; and
- b) a plurality of particles dispersed in the liquid medium;

wherein the delivery system comprises:

c) an effective quantity of a density-reducing agent dispersed within the particles to form density controlled particles wherein the density-reducing agent controls the density of the gel particles.

44. (WITHDRAWN) A density-controlled gel bead suspension suitable for human cosmetic, foodstuff or pharmaceutical use, the suspension comprising:

- a) a transparent liquid medium; and
- b) a plurality of visible gel beads dispersed in the liquid medium, the gel beads optionally being colored;

wherein the gel bead suspension comprises:

c) a density-reducing agent within the gel beads in a quantity effective to prevent gravitational migration of the gel beads in the liquid medium.

45. (WITHDRAWN) A density-controlled bead suitable for dispersal in a transparent liquid medium to provide a suspension suitable for human cosmetic, foodstuff or pharmaceutical use, the gel bead comprising a structural bead material wherein the density-controlled beads comprise a density-reducing agent within the gel beads in a quantity effective to prevent gravitational migration of the gel beads in the liquid medium.

46. (CURRENTLY AMENDED) A method according to claim 31 wherein the ~~wherein the~~ density-control ~~reducing~~ agent comprises a plurality of hollow particles, wherein said plurality of

~~hollow particles comprise non-porous particles which do not substantially absorb oil a gas within a spherical shell, wherein the gas remains within the spherical shell unless said shell is ruptured.~~

SUPPORT = [0069], [0075]

47. (CURRENTLY AMENDED) A method according to claim ~~27~~ 46 wherein the plurality of hollow particles used are gas-filled thermoplastic microspheres.

48. (CANCELED)

49. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, wherein the ~~density-reducing density-control~~ agent is dispersed in a quantity sufficient to give the particles a bulk density of from about 0.8g/ml to about 0.1g/ml.

50. (CURRENTLY AMENDED) A method according to claim ~~27~~ 26, wherein the ~~density-reducing density-control~~ agent is dispersed in a quantity sufficient to give the particles a bulk density less than or equal to the liquid medium.

51. (CURRENTLY AMENDED) A method as in claim ~~27~~ 26, wherein the density-control agent used comprises hollow particles.

52. (CURRENTLY AMENDED) A method as in claim ~~27~~ 53, wherein the density-control agent used comprises hollow particles.

53. (CURRENTLY AMENDED) A method of preparing density-controlled beads dispersible in a liquid medium for incorporation into cosmetic products, comprising:

(a) mixing an active agent and a bead material that is liquid at elevated temperatures, said bead material comprising a restraining polymer;

(b) distributing said restraining polymer throughout said bead material;

(c) adding a density reducer to the resultant mixture, the density reducer comprising entrapped entrapping gas within said bead material by adding an effective amount of a density-control agent, said density-control agent entrapping said gas within a material defining a hollow

~~particle~~ which retains said gas unless said ~~density-control agent material~~ is ruptured, said ~~density-control agent~~ density reducer being introduced into the mixture in a quantity sufficient to provide a desired gel bead density; ~~and~~

(e) forming the resultant mixture into droplets or globules with the density reducer encapsulated therein; and

(f) cooling the droplets or globules to form beads.

54. (CANCELED)

55. (PREVIOUSLY PRESENTED) A method of preparing density-controlled beads dispersible in a liquid medium for incorporation into cosmetic products, comprising:

(a) mixing an active agent and a bead material that is liquid at elevated temperatures, said bead material comprising a restraining polymer;

(b) distributing said restraining polymer throughout said bead material;

(c) adding a density reducer to the resultant mixture, the density reducer comprising entrapped ~~entrapping~~ gas within ~~said bead material by adding~~ a temperature-sensitive expandable thermoplastic ~~density-control agent~~ microsphere ~~to provide a desired bead density, said density control agent comprising particles, at least some of said particles incorporating chambers containing gas;~~

(d) controlling the density and volume of said ~~temperature sensitive substantially impermeable expandable thermoplastic density-control agent~~ density reducer by adjusting the temperature during mixing of said expandable thermoplastic density control agent;

(e) forming the resultant mixture into droplets or globules with the density reducer encapsulated therein; and

(f) cooling the droplets or globules to form beads.

56. (PREVIOUSLY PRESENTED) The method of claim 27, wherein said carrier comprises water and said liquid to which said drops are exposed is hydrophobic.